

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/060194 A1

(51) International Patent Classification⁷: **H04L 27/26**

(21) International Application Number:
PCT/EP2004/053193

(22) International Filing Date: 1 December 2004 (01.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03104617.0 10 December 2003 (10.12.2003) EP

(71) Applicant (for all designated States except US): **TELEFONAKTIEBOLAGET LM ERICSSON (publ)** [SE/SE]; Stockholm, S-126 25 Stockholm (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NYSTRÖM, Johan** [SE/SE]; Kronobergsgatan 22, S-112 33 Stockholm (SE). **FRENGER, Pål** [SE/SE]; Lyckselsevägen 33, S-162 67 Vällingby (SE). **DAHLMAN, Erik** [SE/SE]; Tackjämsvägen 12, S-168 68 Bromma (SE).

(74) Agents: **STENBORG, Anders et al.**; Aros Patent AB, P.O. Box 1544, S-751 45 Uppsala (SE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,

KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

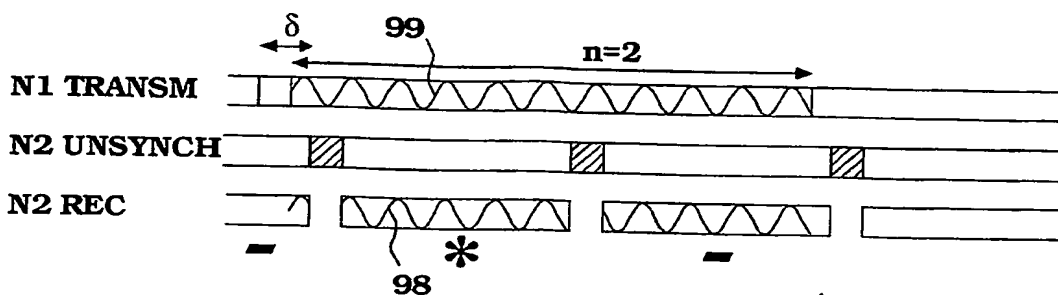
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW. ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

[Continued on next page]

(54) Title: **WIRELESS MULTICARRIER SYSTEM WITH SUBCARRIERS RESERVED FOR COMMUNICATION BETWEEN UNSYNCHRONIZED NODES**



(57) Abstract: In a system applying orthogonal frequency division multiplexing, OFDM, a number of carriers are reserved for communication between unsynchronised nodes (N1, N2). At least one such reserved carrier is assigned to each base station. A sinusoidal signal is transmitted on this reserved carrier during a time period at least equal to two consecutive OFDM symbols. The unsynchronised receiver detects the sinusoidal signal during one of two consecutive OFDM symbol time periods. The existence, the frequency and the signal power of the signal give information about the existence and identity of the transmitter. Also, estimates of relative velocities and distances can be deduced. In preferred embodiments, the sinusoidal signal can also be used to transmit further information by using signal modulation or coding that is independent of the absolute signal phase.

WO 2005/060194 A1



— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.